

Claims 1-54 of record have been canceled. Each of new claims 55-98 corresponds to one of canceled claims 1-54. Specifically, new claim 55 corresponds to canceled claim 11, new claim 56 corresponds to canceled claim 12, etc. No new matter has been added to the claims. It is submitted that the Examiner's rejections under 35 U.S.C. §112, second paragraph, are addressed by the new claim language.

Regarding the rejections under 35 U.S.C. §102(b) in view of Scheve, Applicants respectfully submit that the matter recited in new claims 55-98 is neither shown nor suggested in the cited reference.

When a copolymer which has a principal chain including a component unit having an acidic functional group and a component unit having a hydroxyl group is reacted with an isocyanate compound, a residual group of the isocyanate compound can be introduced to the copolymer. The residual group of the isocyanate compound has a chemical construction in which an isocyanate group is subtracted from the isocyanate compound, and therefore the copolymer can be endowed with various functions or performances depending on a kind of the used isocyanate compound. However, in the prior art, a solution containing the copolymer to which a residual group of such an isocyanate compound is introduced is very liable to raise its viscosity, thus deteriorating stability and coating-suitability of the copolymer solution.

In contrast with the above, according to the present invention, a copolymer which has a principal chain including a component unit having an acidic functional group and a component unit having a hydroxyl group is reacted with an isocyanate compound. As a result, a copolymer can be obtained which has a remarkably high stability of viscosity and therefore is hard to raise viscosity.

Such a highly stable polymer can be obtained in such a manner that a material polymer having a principal chain including a component unit having an acidic functional group and a component unit having a hydroxyl group is reacted with an isocyanate compound until the isocyanate group is vanished from a system of reaction (an ambience of chemical reaction). Thereafter, an acid anhydride group which is a by-product in a copolymer molecule during an antecedent reaction of the isocyanate compound is decomposed by an after-treatment using alcohol. For example, in Example 1 described in the present specification, because the after-treatment using alcohol is carried out after

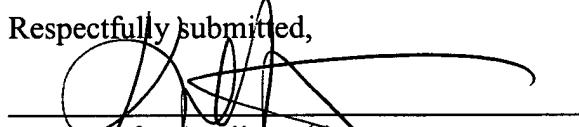
advancing a reaction of the isocyanate compound until its isocyanate group completely disappears from the reaction mixture, the alcohol is utilized for decomposition of the acid anhydride group present on the polymer chain without the presence of a remaining isocyanate group.

Example 1 of Scheve discloses a process in which an acrylic resin with a carboxyl group and a hydroxyl group is grafted by isocyanate ethylmethacrylate, and subsequently subjected to an after-treatment using 2-hydroxypropyl methacrylate. However, in the process described in Example 1 of Scheve, 2-hydroxypropyl methacrylate is added in order to eliminate isocyanate ethylmethacrylate remaining in a reaction mixture. More specifically, in this cited reference, the 2-hydroxypropyl methacrylate added into the reaction mixture is reacted with the free isocyanate ethylmethacrylate remaining therein to produce and present a low molecular divalent acrylic monomer in the reaction mixture. Therefore a purpose of the added 2-hydroxypropyl methacrylate in Scheve is quite different from that of the alcohol used in the present invention.

In addition, because neither an amount of the remaining isocyanate ethylmethacrylate nor an amount of consumed 2-hydroxypropyl methacrylate is specified in the description of Example 1 of Scheve, it is not possible even to estimate from the disclosure of Scheve the extent to which the acid anhydride group as a by-product remains in a molecule of the acrylic resin. Therefore, Scheve neither shows nor suggests the fundamental concept of the present invention.

In view of the above amendments and remarks, the Applicants respectfully submit that all rejections of record have been overcome. The Applicants respectfully request favorable reconsideration and allowance of the present application.

Respectfully submitted,



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